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SFOMC Industrial and Facility Support

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LONG-TERM GOAL

The long-term goal is to support short and long duration testing of shallow water and very shallow water AUV systems and components and to provide overall shallow and deep water capabilities enhancements that support Navy RDT&E needs.

OBJECTIVES

The objective is to provide capability enhancements and thorough industrial and facilities support to all SFOMC projects. These enhancements are to significantly improve meteorological and oceanographic environmental monitoring capabilities both on shore and offshore and above and below the sea surface. Emphasis shall be on monitoring of wind, waves and currents.

APPROACH

The approach was to implement a versatile, robust, reliable, and maintainable sea floor system of multiplexers and sea floor cables capable of high bandwidth data transmission to shore along with specific capabilities enhancements that benefit all the SFOMC projects.

WORK COMPLETED

The SFTF installed a new weather station at the Jetty site in order to provide accurate wind, temperature, and humidity measurements in support of other SFOMC projects. The new station was installed on a 10-meter tower, and located in a clear area, free of obstructions. The system transmits measurements over a solar-powered, wireless telemetry system to an SFTF-designed logging program in the range control facility. This system was designed as a prototype for future remote weather stations that may be deployed in support of SFOMC projects, both along the shoreline as well as at offshore locations on the SFTF range, as required.

The SFTF is currently designing and purchasing the materials to install a fixed platform in 20 ft of water on its range in support of SFOMC projects. The platform will be built of structural steel, will be anchored into the bottom, and will have a top deck elevation of approximately +16 ft above mean low water (MLW). Initially, the platform will support an array of wave staffs, capable of measuring wave height and direction, and a weather station similar to the one located at the SFOMC north campus site. A 16-conductor shore cable runs to the tower site, and it will provide power and telemetry for the platform. A NAVOCEANO tide gauge has been installed at the planned tower location since April

2003, and provides a baseline data set for waves in the vicinity. The planned tower install date is mid-November 2003.

The SFTF is planning to install a RDI ADCP in approximately 270 ft of water in September 2003 to augment other SFOMC environmental sensors in the area. The unit will be installed on a recently laid fiber optic cable, and the data will be telemetered back in real time for addition onto the SFOMC environmental website.

RESULTS

Solid results were achieved in support of all ONR sponsored activities. These include but are not limited to successful integration of the acoustic communication hardware with a robust data telemetry system and installation of additional environmental monitoring systems. Range operations and range related activities increased from 52 total days in FY02 to 119 total days FY03, a 129% increase in use.

IMPACT/APPLICATIONS

The most significant impact of the facility and industrial support was the hardening of the underwater and environmental systems to the point where 24/7 operations are being maintained on all key environmental and data communications systems

RELATED PROJECTS

All SFOMC execution efforts are related to this project as this effort supplies the mechanism by which most work done at sea is accomplished.

This project aids the scientific community and benefits the local community through acquisition and sharing of local geographical, environmental, and oceanographic data and information. Applications of societal relevance include safe navigation, search and rescue operations, beach erosion forcing function measurement, monitoring of transport mechanisms for pollution from sewage plants, harmful algal blooms, and hazardous material tracking.

Of particular impact is the synergy created at SFOMC among scientific and applied users. The meteorological and oceanographic data is being shared with Broward County. The offshore tower is the site for a planned installation of a Broward County's first real-time offshore environmental monitoring system. The installation of the very shallow water wave staff array is expected to benefit Navy modelers seeking ground truth data for coastal process studies as well as coastal engineers engaged in modeling of the dynamics of the beach adjacent to the wave staff array.